

File No. 16632 Appendix D: Protocol for Field Abscess Treatment and Antibiotic Administration in Hawaiian monk seals

**NO INTERVENTION SHALL BE ATTEMPTED WITHOUT
VETERINARY APPROVAL AND
PERMISSION PRIOR TO EACH AND EVERY ATTEMPT**

Abscesses are relatively common in Hawaiian monk seals, particularly weaned pups. They often arise secondarily to bite wounds from interactions with other seals. Abscesses can grow to the size of basketballs, thus impeding daily function, and occasionally cause systemic illness (septicemia, a bacterial infection of the blood) and death. Intervention in the field is aimed at reducing the risk of septicemia and includes monitoring, careful documentation, and with veterinary approval, lancing abscesses and/or administering antibiotics. The following document provides written guidance for field responders to intervene when hands-on veterinary assistance is not available, though no attempts should be made without veterinary consultation and approval.

VETERINARY APPROVAL PROCESS

Field responders should be prepared to provide veterinary staff with the following information (at a minimum) **before** any intervention:

1. Age, size, sex
2. General nutritional status (fat, average, thin)
3. Molting status
4. Animal behavior:
 - a. When last observed?
 - b. Alert/responsive or lethargic?
 - c. Coordinated movements and good mobility?
 - d. Thermoregulatory behavior?
 - e. Any other abnormalities?
 - f. Size, shape and location of injuries
5. PHOTOS (both close-up photos of injuries as well as full body images)
6. Name of on-site team leader (must be state or federal employee)
7. Number of people able to assist in intervention attempt, should one be requested by the veterinarian

PRIORITIZED LIST OF CONSIDERATIONS

1. **Risks to human health and safety are to be minimized.** The size, health and abilities of a restraint team relative to the size and behavior of the animal will be of paramount importance in deciding whether or not to attempt intervention.
2. **Animal behavior:** The need for intervention should be determined by the animal's behavior and mentation and should not be based solely on the size of an abscess or wound.
3. **Abscess maturity:** Photographs and history will be used to determine the maturity of an

abscess and subsequent likelihood of successful draining.

- Treatment may not be indicated in many cases.
- Lancing and intervention may be used without antibiotic administration.

ANTIBIOTIC ADMINISTRATION

Use of antibiotics, type, dose and route will be determined **ONLY** by a veterinarian. The drug of choice that will be supplied to all islands is Ceftiofur (brand name: Excede).

Only State or Federal employees are authorized to administer antibiotic medications to wild monk seals (via pole syringe or otherwise), and only after consulting with a veterinarian. Administration of antibiotics to wild seals is an action that at this time is covered only under the Marine Mammal Health and Stranding Response permit (not under the PIFSC permit).

Antibiotics:

Ceftiofur (Excede) 200mg/ml

- 3rd generation cephalosporin (broad-spectrum, gram-positive and gram-negative bactericidal antibiotic)
- Route: Intramuscular (IM)
- Adverse effects are uncommon but potentially could include: pain at injection site, discoloration of the skin, hypersensitivity reactions.
- Long-acting (5 days)
- Dosage (6.6mg/kg) will be calculated by consulting veterinarian and instructions will be given to team leader.

WHAT IS AN ABSCESS?

An abscess is the body's way of walling off an infected region of tissue. In young monk seals, abscesses often arise from bite wounds or other trauma. Abscesses can occur in the skin, blubber, muscle, and lymph nodes and can thus range from being near the skin to deep within the tissues. Abscesses can be very large but may also have pockets, which sometimes makes finding the right spot for lancing difficult. Many abscesses are soft, but some are firm and cannot be expressed as easily. The material inside an abscess can be watery, bloody, milky, greenish, thick and even crumbly.

ABSCESS INTERVENTION PROTOCOL

All persons coming into direct contact with the seal or collecting specimens must be in good health and **wear gloves and protective eyewear**. Follow these instructions only after the veterinary team has given permission to intervene. **Interventions (including failed attempts) should be kept within 10 minutes to the greatest extent possible and should be done during the coolest hours of the day.**

1. SUPPLIES:

Gloves
Protective eyewear
Scalpel blade (#10)
Scalpel handle

12, 20 or 30 ml syringes (luer lock and curved tips preferred if available)
 60 ml syringes
 18g x 1.5" needle
 16g x1.5" needle
 Surgical scissors or forceps
 Duct tape
 Pole syringe with sterile hypodermic needles
 Antibiotics if applicable
 Betadine or 3% hydrogen peroxide for flushing abscesses after lancing

2. **Human safety comes first.** Interventions should only be performed by an experienced team and on an animal that can be safely restrained.
3. **Animal safety comes next.** Ensure that conditions are appropriate prior to attempting an intervention, and quickly abort a handling if the seal exhibits signs of stress. Please review the *Hawaiian Monk Seal Clean Protocol and Handling Protocol* (below) prior to attempting a seal capture.
4. **Restrain** the animal and feel the abscess to determine if fluid is present.
 - a. If you can't tell, insert a syringe and sterile needle into the softest part of the abscess (or spot that looks like it might rupture) and try to draw out fluid. Sometimes, the skin overlying the part of the abscess that is closest to the surface is discolored and flaky.
 - b. If no pus extracted in 2 attempts or if seal shows signs of stress, **stop here**.
5. **If fluid is present, lance the abscess.**
 - a. Ensure that animal is adequately and safely restrained.
 - i. If restraint is inadequate or becomes unsafe (for humans and the seal), **stop here**. Discuss mounting scalpel on a pole with veterinarian (see #7, below).
 - b. Ensure that the stress to the animal is within appropriate limits for continued restraint.
 - c. Uncover the scalpel blade, keeping the cutting edge away from the animal's body.
 - d. Insert blade quickly and firmly into the softest and most ventral (dependent) region of the abscess and cut deep through the skin, keeping blade oriented facing out and moving away from the animal's body. The location of the incision should be dependent enough so that the abscess will continue to drain by gravity alone.
 - e. Make two incisions, forming an X-shape to facilitate adequate drainage.
 - f. Generally speaking, incisions 1.5 to 2" long would be the *minimum* length for adequate drainage of any large abscesses.
 - g. If drainage is slow or limited, put scissor points or forceps into hole and open them to widen the aperture of the hole. If you find more an additional squishy spot, you may incise in a second location, provided that the seal and personnel remain safe.

6. **Drain abscess:** After cutting, compress the abscess to express as much fluid as possible. There may be small chunks of tissue, clots or other debris that may need to be pushed out in order to fully express the pus. Fluid may also be bloody. Use caution to prevent fluid from contacting the eyes of the seal and responders.
7. **Flush abscess:** Use a large (preferably 60 ml) syringe filled with dilute betadine or 3% hydrogen peroxide. Insert syringe tip into the incision, close skin around the tip and gently fill abscess “pocket” with fluid, then remove syringe and express it out the incision. Repeat a second time if seal continues to be restrained safely and is not too stressed (see “Seal Handling” section 6.a and 6.b. below).
8. **Lancing abscesses without restraint:** If human and seal safety deems restraint inappropriate, consider mounting scalpel blade on a pole. **Pole lancing of abscesses is a treatment that should only be attempted after conferring with a qualified veterinarian.**
 - a. Pole should be of sufficient length to facilitate escape (ex: tent pole, marine debris, bamboo)
 - b. Attach scalpel blade (#12 curved is preferred, or use #11 or 22) to scalpel handle and duct tape to pole, ensuring that no more than 1 to 1.5” of the blade extend beyond the end of the pole.
 - c. Animal should be in a location that is safe for both humans and the seal (flat, sandy beach without rocks or obstacles).
 - d. Only the person handling the pole should approach the seal.
 - e. To lance the abscess, keep the cutting edge of the blade facing out and away from the seal’s body. Make a single, directed jab into the most fluid (“jiggly”) portion of the abscess. Do not drive the scalpel deep into the muscle. Within the jiggly portion of the abscess, make your incision at the ventral-most aspect so that fluid will continue to drain after treatment.
9. **Methods of injection:** To be dictated by veterinarian. Double check all labels before drawing up drugs. Make sure not to contaminate needles or the top of the antibiotic vial.
 - a. Hand syringe - Draw up designated amount of antibiotic using a 10-20 ml syringe and 18g or 16g x 1.5” sterile needle. The larger the syringe and the larger the needle, the faster the drug will go into the animal – this is especially important to consider in cases of minimal restraint. Responders should be trained to use appropriate restraint or cross-boarding techniques. Administer antibiotic to seal’s right gluteal region if possible. Record location of injection for the Monitoring Report.
 - b. SafeTFlex pole syringe - Draw up specified volume of antibiotic in a 6-20 ml syringe as accurately as possible using a sterile needle (18-20g needle of any length). Attach a sterile needle of appropriate size (16-18g, 2-3.5” long, depending on age class and body condition) to the pole syringe. Pull the pole syringe plunger back to make room in the pole syringe for the drug volume you

just drew up. Inject the antibiotic into the pole syringe by placing the smaller needle on the first syringe into the 16-18g needle and expelling the drug from the first syringe into the pole syringe. The drugs are administered through the pole syringe by the force used to push the syringe into the right dorsal posterior end of the seal**. If possible, wait until the seal is sleeping and sneak up behind the seal to give the injection in the right gluteal region. Follow through with a forward motion until you are certain the full dose of antibiotics is given. Let the motion of the seal as it moves away from you withdraw the needle.

**This statement applies only to the SafeTFlex pole syringes. The Dan Inject Jab-Stick pole syringe is spring loaded. Refer to the step-by-step instructions in the Jab-stick carrying case for operation. JAB-STICK SHOULD ONLY BE USED BY RESPONDERS SPECIFICALLY TRAINED IN ITS USE.

POST-TREATMENT MONITORING REPORT

Seal should be observed for 30-60 minutes post-treatment/until it goes into water. A summary of what was done must be submitted by email in a post-treatment Monitoring Report within 24 hours of intervention and should minimally include:

1. Date of intervention
2. Names of all responder(s) and roles in intervention
3. Intervention start and finish times
4. Type(s) of intervention performed (*i.e.*, lanced abscess, administered antibiotics) and photos/video if possible
5. Details of intervention (tools used, type of restraint)
6. Name and volume of any drug(s) administered
7. Location (body site) and route (presumably IM) of drug administration
8. Follow-up observations made during immediate post-intervention monitoring (30-60 min. post)
9. Description of any complications that occurred during or after intervention
10. When animal was next observed:
 - a. Date
 - b. Behavior
 - c. Appearance of injection site (photos if possible)
 - d. Appearance of wound/injury/abscess (photos if possible)

CLEAN PROTOCOL FOR HANDLING SEALS:

When handling Hawaiian monk seals, our goal is to limit the possibility of disease transfer either to humans or to other seals via any of the five basic routes; direct, aerosolization, ingestion, injection, and absorption. **Proper sanitation can prevent or minimize transmission.**

Below are general procedures to follow whenever there is physical contact between humans and live monk seals.

1. Protective Clothing:

Seal restrainers (*i.e.*, those who may come into contact with the seal's body) should wear clean coveralls, disposable latex or nitrile gloves, and full coverage footwear. Cloth gloves over the disposable gloves are optional, and may provide better grip. Protective eye wear (*e.g.*, sunglasses) and kneepads are recommended, but optional.

Other response personnel (*i.e.*, those that will not contact the seal) should wear disposable latex or nitrile gloves (if handling samples), eye protection and full coverage footwear.

2. After Each Capture: CLEAN all instruments/gear by washing thoroughly with soap and water. This includes nets, instruments, buckets, and other items that may have been contaminated. Once cleaned, DISINFECT everything with a 1:20 solution of bleach water* (can use salt water) for a minimum of ten minutes. Place all sharps in a labeled "SHARPS" container. Any contaminated non-sharps disposable items (*e.g.*, gloves (latex or nitrile), ziplock bags, and garbage bags (holding soiled protective clothing), may be bleached and disposed of in the trash or put in a biohazard bag inside of a five gallon bucket labeled "For biohazard use only".

Rinse all equipment after the 10 minute bleach soak. Thoroughly WASH HANDS with anti-bacterial soap.

3. Back At Camp: WASH and then SOAK all coveralls, cotton gloves, and other reusable cloth gear (including footwear) for preferably one hour but at least 10 minutes in bleach solution (1:20) and then rinse and let dry.

Bleach solution may be re-used within a 24-hour period (unless it is contaminated with organic matter). Do not dispose of the bleach solution into the ocean. Once the solution no longer smells like bleach, the bleach has evaporated and the remaining liquid can be poured into the sand above the high water line.

SEAL HANDLING

1. **When to handle and time of day.** Because older animals are larger, they have less surface area relative to body mass, and are more susceptible to heat stress. **Have water ready to cool the animal** and, limit your efforts to **early morning or late afternoon/evening**.
2. **Disturbance.** The seal to be handled should be away from other seals.
3. **Mental preparation.** Before handling/tagging any seal, even a pup, make sure you are completely prepared. Double check all equipment and supplies, talk the team through the event, assign roles, discuss what to do when, and ensure all are mentally prepared. Make sure you have a bucket of water handy, or someone is designated to get the water as soon as the procedure begins.
4. **Environmental hazard assessment.** As mentioned above, there are several external factors, such as ambient temperature, that need to be considered prior to catching a seal. Take at least a minute to survey the seal's surroundings for any hazards that might threaten you or the seal during capture. In particular, look for anything that might injure the seal if it thrashes or resists restraint. This could include sticks, rocks, or different types of debris. If a weaned pup is captured in the wave wash or close to the water's edge, you can move it up the beach - but not great distances (a few meters) by dragging it by its rear flippers or putting it in a stretcher net and carrying it away. If you are using a net, be aware of the seal's proximity to the water and the potential for the seal getting to the water while entangled in the net. If the threat cannot be mitigated, then wait for the seal to move or try herding the seal to a more favorable spot. Be conservative when assessing threats, the seal can always be captured at another time and it isn't worth injuring yourself or the seal. **If you, or anyone on your team, have doubts, SPEAK UP.** A good rule of thumb: If there is anything that makes you question your safety (*i.e.*, you might cut yourself catching a seal on a rocky platform) it is probably a good idea to catch the seal somewhere else.
5. **Seal capture and position.**

Recommended minimum number of team members for animal handling by size of seal:

Weaned pup: 2 people, may/may not use a stretcher net
Juveniles: 3 people, and a stretcher/hoop net
Subadults/adults: 4 people, and a hoop net

Before capture, record the time of day. The first person on the seal is the head restrainer, who is the one to direct the handling, and is the last person off the seal. Use low voices and do not walk or move in front of the head. Monk seals are not aggressive, and their first response is usually to flee. However, all seals may bite, including pups (though their teeth may not be fully erupted yet). **A restraint**

time limit of 10 minutes or less is recommended, however the appropriate time is dependent on how hard the animal is fighting, how hot it is, the condition of the restrainers, etc.

The restrainer will capture the seal, but may require help from the rest of the team. The restrainer should straddle the seal's body at the shoulders, and use his/her hands and knees to hold the animal in position. Put as little weight on the seal as possible - most of the time you won't need to put any weight on it. **Don't put your full weight on the seal. Do not stand or kneel on the seal's flippers.** Be particularly cautious that there are no rocks or other objects that could obstruct the seal's airway beneath the neck. Restrain the fore flippers by folding them along the animal's side, stabilizing them with your knees and thighs so it can't use its fore flippers as leverage to roll. The seal should be laying on its ventral surface. The seal may try to roll, and it will be the restrainer's job to reposition the seal on its ventral surface. It is helpful if you can maintain the seal with the head facing uphill. You may find it easier to control the head if you grab the skin folds of its neck. Other staff can help control movement of the hips and hind flippers as necessary. It is not absolutely essential that the seal be flat on its abdomen, though this position is safer for the handler. Remember to stop timing at the end of the event.

Handling/tagging of older animals is more difficult because the animals are larger and stronger, and therefore **more difficult to restrain**. They therefore represent a **more serious threat to the restrainer(s)**, and are capable of inflicting more serious injuries. In some instances the restrainer may not straddle the animal, but will lie along the sides of the seal's body holding the seal down (like a human squeeze cage).

6. Seal stress.

- a. **Restraint stress.** Restraint times for treatments should be kept as short as possible to minimize stress to the seal. The head restrainer is responsible for monitoring the seal's level of alertness and respirations throughout the restraint period. The seal's breathing pattern may be irregular, and it may only breathe through one nostril. However, if there is a sudden change in breathing pattern, either a rapid increase or sudden decrease, this raises concern. For example, if a pup holds its breath for more than 20 seconds, immediate release should be considered. Check the seal's eyes to see if they are responsive; i.e., is the seal looking around, does it respond to your hand or something that you move into its field of view? Tap it gently with your finger behind the eye. If it doesn't show some response or its response is slow and the seal does not appear to be attentive, then abandon the procedure and immediately release the animal and monitor it from a distance. **Please be conservative in your decision-making and err on the side of caution.** You can capture the seal again later if you need to (under the direction of the vet); however, if it dies due to capture stress, this will negatively impact not only the individual seal and species recovery, but our ability to

conduct similar treatments in the future.

- b. **Heat stress.** Because procedures are usually relatively quick and the pups are relatively small, the chances of heat stress are reduced. Nevertheless, heat stress is possible and potentially lethal, especially on a hot afternoon and for larger/older animals. Make sure you have water handy to cool the animal. The animal is best cooled by gently pouring water over its hind flippers. Don't sit on the animal. Try to minimize the amount of its surface that is covered with a warm human body. If in doubt, always err on the side of keeping a seal cooler, as cooling an overheated seal is difficult and often unsuccessful.

Hawaiian Monk Seal Antibiotic Treatment Protocol

PIFSC staff must document information in the table below for all field staff authorized and trained to administer antibiotics to Hawaiian monk seals

Only State or Federal employees (no volunteers) are authorized to administer antibiotic medications to wild monk seals (via pole syringe or otherwise), and only after consulting with a veterinarian.

Individuals that may be authorized to administer antibiotics via pole syringe or otherwise in the NWHI during the 2012-2013 winter field season are listed below.

Island/Atoll	Name	Agency	Title	Training/previous experience
Laysan	Andrea Kristof	USFWS	Biological Science Technician (field camp leader)	HMS abscess treatment/pole syringe training 9/27/2012.*No direct previous HMS experience, although has worked at Laysan multiple years.
FFS	Chad Bell	USFWS	Tern Island Refuge Manager	HMS abscess treatment/pole syringe training 10/2/2012.* No previous HMS experience. Has used pole syringe to inject antibiotics into elk several times.
Kure	Matt Saunter	DLNR Hawaii/RCUH	RCUH/CCRT/Natural Resources Management Technician (Kure DLNR field camp leader)	HMS pole syringe training 10/09/2012.* Has assisted with HMS tagging and disentangling.

Island/Atoll	Name	Agency	Title	Training/previous experience
Kure	Naomi Worcester	DLNR Hawaii/RCUH	RCUH Biological Technician (Kure DLNR field camp assistant)	HMS pole syringe training 10/09/2012.* Worked previously for HMSRP at Kure, has treated HMS abscesses in the field, including injecting antibiotics into restrained animal on 4 consecutive days.
Kure	Ilana Nimz	DLNR Hawaii/RCUH	RCUH Biological Technician (Kure DLNR field camp assistant)	HMS pole syringe training 10/09/2012.* Worked previously for HMSRP at Kure, has treated HMS abscesses in the field, including injecting antibiotics into restrained animal on 4 consecutive days.
Trained, but not currently scheduled to deploy	Cynthia Vanderlip	DLNR Hawaii/RCUH	RCUH Biological Field Station Supervisor	HMS pole syringe training 10/09/2012.* Has previous experience tagging, restraining, translocating, disentangling HMS

Individuals listed below also attended the training but are not authorized to inject antibiotics.

Tern:

Olivia Bailey Tern Volunteer

Larry Chlebeck Tern Volunteer

Abram Fleishman Tern Volunteer

Laysan:

Royce Daniels Laysan Volunteer

Leslie Parker Laysan Volunteer

Andy VanDeusen Laysan Volunteer

Kure:

Joshua Willman Kure Volunteer

Dakshina Marlier Kure Volunteer

Parker Shebs Kure Volunteer

***Description of training:**

All individuals were trained by Angie Kaufman, who has treated abscesses in the field, including injecting antibiotics. She was trained by Dr. Gregg Levine in using the SafeTFlex pole syringe and was trained and supervised by Dr. Bob Braun to administer injections to live animals using a regular syringe. All trainees were instructed to contact NMFS if an abscess is suspected, and to take no action without consulting with a designated NMFS veterinarian. Training included introduction to equipment and supplies, importance of human safety, sterile techniques when administering antibiotics, and how to administer antibiotics via regular and pole syringe. Training refresher courses will occur annually in conjunction with field staff training. Pole syringe training included instructions following the directions below:

SafeTFlex pole syringe - Attach a sterile needle of appropriate size (16-18g, 2-3.5" long, depending on size and estimated blubber thickness) to the pole syringe. Draw up appropriate amount of antibiotic into the syringe. The drugs are administered through the pole syringe by the force used to push the syringe into the dorsal posterior end of the seal. If a repeat dose is authorized, administer it on the opposite side of the body from the first dose. If possible, wait until the seal is sleeping and sneak up behind the seal to give the injection in the right gluteal region. Follow through with a forward motion until you are certain the full dose of antibiotics is given. Let the motion of the seal as it moves away from you withdraw the needle. If available and ONLY if it will not interfere with the response effort, you may use a pole-mounted camera (or camera on the responder's head) to video the effort for assessment and debriefing purposes. Alternatively, photograph the animal as soon as possible after the response for assessment of the injection site location.

Drug dosage to be used with permission of veterinarian:

Ceftiofur (Excede, 200mg/ml) dose is 6.6mg/kg

See Abscess Treatment Protocol for directions on how to administer Ceftiofur.

PIFSC staff must document the following information if, under the direction of a veterinarian, it is determined that antibiotics should be administered to a HMS.

- Date of initial contact
- Island/Atoll
- Names of individuals responding
- Background information on situation
- Training-include summary of information covered in training, who did the training, who attended (see table above)
- Attending vet
- Action taken

- Drug dosage and precise description of injection site location
- Monitoring Report-report on what was done, how animal responded, follow up observations